

CLAIMS

We claim:

1. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising:

a recombinant expression construct comprising at least one promoter operably linked to a nucleic acid sequence encoding a cell surface receptor antigen, a nucleic acid sequence encoding a first immune response altering molecule and a nucleic acid sequence encoding a second immune response altering molecule, wherein said first and second immune response altering molecules are different from each other and are selected from the group consisting of an accessory cell agent and a T cell agent.

2. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising the expression products of the recombinant expression construct according to claim 1.

3. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising:

a) a first recombinant expression construct containing at least one promoter operably linked to a nucleic acid sequence encoding a cell surface receptor antigen and a nucleic acid sequence encoding a first immune response altering molecule; and

b) a second recombinant expression construct containing a promoter operably linked to a nucleic acid sequence encoding a second immune response altering molecule,

wherein said first and second immune response altering molecules are different from each other and are selected from the group consisting of an accessory cell agent and a T cell agent.

4. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising the expression products of the recombinant expression constructs according to claim 3.

5. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising:

- a) a first recombinant expression construct containing at least one promoter operably linked to a nucleic acid sequence encoding a cell surface receptor antigen;
- b) a second recombinant expression construct containing a promoter operably linked to a nucleic acid sequence encoding a first immune response altering molecule; and
- c) a third recombinant expression construct containing a promoter operably linked to a nucleic acid sequence encoding a second immune response altering molecule,

wherein said first and second immune response altering molecules are different from each other and are selected from the group consisting of an accessory cell agent and a T cell agent.

6. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising the expression products of the recombinant expression constructs according to claim 5.

7. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising:

- a) a first recombinant expression construct containing at least one promoter operably linked to a nucleic acid sequence encoding a cell surface receptor antigen; and
- b) a second recombinant expression construct containing at least one promoter operably linked to a nucleic acid sequence encoding a first immune response altering molecule and a nucleic acid sequence encoding a second immune response altering

molecule, wherein said first and second immune response altering molecules are different from each other and are selected from the group consisting of an accessory cell agent and a T cell agent.

8. A vaccine for eliciting or enhancing the titer of antibodies specific for a cell surface receptor antigen, comprising the expression products of the recombinant expression constructs according to claim 7.